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FROM THE LIFE OF TISZA-RESEARCH WORKING COMMITTEE TISZA-RESEARCH CONFERENCE XII (1981)

Compiled by

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XII. Annual Tisza-Research conference was held on 24—25 April 1981 in the meeting hall of the Water Economy Management of the Low-Tisza region. Except for the Hungarian participants some members of the Yugoslavian research team were present and delivered lectures.

After the president's address dr. I. VÁGÁS greeted the participants in the name of the Water Economy Management. He highly appreciated the importance of the Water Economy Management. He highly appreciated the importance of theoretical and practical cooperations of Tisza-research, and as one of the hosts wished successful and useful work to the participants of the conference.

This was followed by informations about the results of Tisza-research in 1980 delivered by GY. CSIZMAZIA.

Lectures followed by active discussions were divided into two topics. Finally the lectures answered the questions and reacted upon the additional and critical remarks.

1. topic

General and hydrobiological investigations into the water-system of the river Tisza

VÉGVÁRI, P.:

Effect of Eger and Laskó streams on the water-quality of the Kisköre reservoir

High bank, bordering the right riverside of Tisza from the upper end of "Kisköre" reservoir up to the middle of "Sarudi rét", had an important role in rising of different water quality. The "Abádszalóki" bay was filled up mainly by Tisza water, while the greatest part of the reservoir's water came from Eger and Laskó streams with worse water guality from chemical, biological and hygenic view-points. As a result of this, in some places the actual trofity level was about the benotic hypertroph.

Irrigating chanels were constructed by opening the high bank which has signi-

ficantly changed the hydrological conditions and the water quality in the reservoir. Undesired effect of the streams has been decreased significantly and the macrovegetation spreading has been stopped.

Rinsing through the different bays with fresh Tisza water resulted in certain oligotrophization and in the decrease of salt-content.

Generally significant improvement of water quality has occured in the area. The effect of Eger and Laskó streams exerted on the reservoir has decreased. It would be advisable — first of all from hygenic view-point — to drain the edbadly polluti water of the two streams, using the inner water drainage system, into the Tisza south of the "Kisköre" reservoir.

GYŐRI, ZS.:

Physical and chemical characters of the water of the streams of Eger and Laskó

Eger and Laskó, being two small streams of the Western part of Upper-Northern mountain area are situated between the mountains of Bükk and Mátra, the former having its source from a spring of limnokren type and the later from that of helokren type.

The water guality of Eger stream is determined except its chemical characteristics first of all by the effects of the area's industrial and agricultural plants' and communal pollution. Laskó stream crosses an area with scarcer populations, so its water is less polluted with organic materials.

Our investigations recorded the present water quality conditions, stating that those of both streams are significantly worse than that of the river Tisza according to chemical parameters.

KERESZTES, T., MÁRFAI, L. and JÁSZ, T.:

Loading possibilities of the region of the river Tisza managed by the water economy management "ATIVIZIG" (1971—1978)

Loading possibility is a question of a given place or region. As a data of water quality it is the product of multiplication of the end-concentration and the characteristic mass of water resulting in g/sec.; that end-value which occure after the inflow of contamined water (after mixing the contamined water with the receptor's one) without the receptor's damage. Its investigation has special importance because financial factors require the study of natural processes, that is the recipient's "tolerance" and self-purification capacity because they determine the necessity of the establishment of the often rather expensive artifical sewage farms.

Data characterising best of all the quality of water loaded with domestic and organic industrial sewage are those of oxygen-economy, the most significant of which is the amount of dissolved oxygen and the connected oxygen saturation.

Present paper describes the loading possibilities of the Tisza region between the inhabited places "Csongrád" and "Tiszasziget" from 1971 to 1978 during 5 floodless years. Data were analyzed with computer programming.

MÉSZÁROS, M., K. BALOGH, I. and SZÉLL, J.:

Investigation of the effect of irrigation water polluted with chlore-bromuron in pre- and postemergent treatments

Urea-type herbicides interact in the second light period of the photosynthesis at postemergent treatment. This effect is followed by some other secondary effects. The photo-induced electron transport and the connected phosphorelations are being inhibited; the basic electrontransport and the non-cyclic one are being inhibited as well with water being electrodonor and $NADP^+$ or pherricianid as electroreceptor (Hill-reaction). The chlore-bromuron interacts on several points of the pathway connected with the second light period.

In our experiments the herbicide effect was investigated simultaneously with sawing in pre- and postemergent treatments. Experiments were carried out with cucumber-, barely-, rye- and oat seedlings in laboratory and field experiments in culture pots. The catalaze and peroxidaze activity, the changes in total protein content, the changes of total ascorbic-acid and phenol contents, the increase of dry-weight and growth were measured.

SZÉLL, J., BALOGH, I. and MÉSZÁROS, M.:

Herbicide mixture's action in wet and dry conditions

Effect of broumphenoxim, therbutylazim and glyphosat mixture was investigated in laboratory and field experiments in culture pots. Herbicides like these and their analogues are oxidative phosphorilation uncouplers with broum being the most potent substituent. This mixture damages metabolysm in many places. It may cause growth disturbances, even may kill the plant. That's why it is not easy to establish the concentration proper for weed-killing but not harmful for cultured plants. According to our observations the preemergent treatment didn't damage the test plants if herbicides were mixed with suitable amount of water, while the same concentrations used postemergently didn't kill the plant.

In our field experiments carried out in culture pots both the pre- and postemergently dosed concentrations killed the plants. During the experiment the natural moisture was negligable, so it could have been established that the activity of herbicides could be detected for about 62 days.

BALOGH, I., KISS, J. and FÜGEDI, K.:

Effect or irrigation water polluted with herbicide and engine-oil on cucumber seedlings

(This paper will be published in the Tiscia for 1983.)

HEGEDÜS, M., LANTOS, J. and ZSIGÓ, M.:

Some results on the antibiotic resistance of E. coli and Salmonella strains isolated from surface waters

In connection with water pollution often has been raised abroad the problem of transferable resistance (R plasmid) of E. coli and coliform strains occuring in domestic and hospital sewages and in the rivers.

In Hungary according to our informations, this kind of investigations were carried out only in the Danube river. In the station of Public Hygiene and Epidemics of County Csongrád during the past two years frequent investigations recorded the resistance of E. coli and *Salmonella bacteria* isolated from surface waters. According to the results 40—60% of E. coli strains were resistent while *Salmonella bacteriae* were highly sensitive to examined antibiotics.

The aim of our investigations and this lecture is to call the attention to the widespreading of R plasmids as possible risk factor in our rivers, the number of which is constantly increased by the ever-increasing sewage inflow.

ESTÓK, B.:

Bacteriological status of the Eger and Laskó streams

Eger and Laskó streams take their source and flow into the "Kisköre" reservoir in the territory of County Heves. Laskó crosses scarcely populated habitations, consequently it contains less organic sewage and epidemic bacteriae than Eger. The later is more polluted (differently treated domestic and industrial sewages). The other source of pollution is illegal sewage outlets in the area of Eger and the intensive animal husbandry along the reach between Szihalom and Négyes. Worst is the stream's bacteriological condition in the area of Almár—Nagytálya—Szilhalom. From the view-point of chemical data Eger stream is more polluted than Tisza. As far as Salmonella content is concerned in the water of Tisza this epidemic bacterium could have been registered only in 33.7% along the reach between Cigánd and Kisköre, while samples of Eger showed 42.8% positivity immediately at the inlet into "Kisköre" reservoir unanimously spoiling the bacteriological status of the reservoir. Consequently when considering the sport, holidaymaking, agricultural and other water-consumption possibilities the bacteriological status must be taken into account all over the area of the reservoir aspecially at the mouth of the Eger stream.

KISS, I.:

Problems of algal indicators and
water classification in the environment protection
of the river Tisza and its tributaries

In several cases existence of physiological variants of alga species, the so called biotypes has been observed. That's why introduction of physiologic and genetic experiments are necessary for the analysis of the four main indicators of water quality with the help of algae. In the case of halobity it is doubtful even at an osmotically non-damaged organism whether it has strong halophity or it is to be considered only as a halotolerant. As enzyme activity is significantly effected by pH, the role of it must be stressed (probably using the term of ionity or hydrogen-ionity) together with salinity.

Saprobity and trofity are connected not only by the mineralization but also by the heterothoph nutrition of certain algae. Several of them have al strong auxotrophic character being able to use up and incorporate the amino acids of the water-polluting proteins, many of them in subkingdom Euglenophyta demand the auxin; several of them or their varieties seemed to be dependent from vitamin C. Consequently polluting organic material needn't always be mineralized. Some algae

change their morphology according to toxicity. All the alga bioecenosis should be more taken into account for indication. The influence of tributaries should be "experimentaly" investigated as well from the view-point of algae bioecenosis of the river Tisza.

HAMAR, J.:

Algologic data of the Eger and Laskó streams

The streams' algologic community is fundamentally influenced by pollution considerably selecting their microflora. Consequently the species found indicate these pollutions. So suitable to the amount of food supply planctonic community can not develop and algologic composition becomes homogenous.

Based on the appearance of organisms indicating pollution the water quality of the stream Eger is worse than that of the other stream, consequently it has a more significant influence on "Kisköre" reservoir.

KISS, K.:

Characteristic phitoplancton groups along the river Tisza and the Eatern Mainn channel

When examining the planctonic algae of the Eastern Main channel it was striking that quantitative relations of phytoplanctons significantly differed from one another not only during some successive years but within a year as well. Concerning quantitative relations totally different planctonalga groups appear even within some weeks. Logically rises the question whether Tisza and the Eastern Main channel do have their "own" phitoplanctonic group(s) characteristic for them periodically.

In order to answer this question constance values (K) of species found in samples were examined using the data of KÁRPÁTI Z.-TERPÓ's handbook (1971). Samples taken from the same site in different periods were considered as characteristic for the same stock, and the different samples were compared (for example the species occuring in the 80—100% of the samples of a given period was considered as that with 5. constancy).

It can be stated according to the samples' analysis that phytoplanctonic groups in the dammed up water at "Tiszalök" and those in the Eastern Main channel can be included into the same type during the development of mass-vegetation, that can be characterized by the constant presence of Stephanodiscus hantzschii and the species of Chlorococcales in great quantity. Certain subtypes of this mass-vegetation type are to be observed as well.

WAIJANDT, J. and BANCSI, I.:

Material-flow investigations in the area of Szolnok

Along the Middle-region of the river Tisza in the area of Szolnok 19 times were carried out water-delivery and cross-section material flow investigations relating to 6 components (total quantity of floating material, acetic permanganetic oxygen demand, conductivity, ammonium-ion, nitrate-ion, solved o-phosphat-ion). The flow of each component was calculated using the speed of flow and the concentration data of samples taken in 9 vertical rates by 1 or 2 meters.

The methods of calculations are as follows:

— using all the concentraion data of vertical rates and the actual speed of flow;
— using the average concentration data of vertical rates and the water output;
— using average concentration data and water output of the whole segment;
— using concentration data of the current-line and the water output of the segment.

Different methods of calculating material-flow and the comparison of data aimed to determine the minimal sample number and concentration the determination of which would still provide authentic average material-flow data.

Connection between the material-flow of 6 components and the water output was examined as well.

GÁL, D.:

Comparative zooplancton investigations in the dead reach of the river Tisza

Qualitative and quantitative changes in the zooplancton of the 5 most important dead reaches of the Lower-Tisza region (Atka, Körtvélyes, Mártély, Alpár, Tiszaug) were investigated monthly during the last two years.

Regarding both species and individual numbers Rotarita species were dominant in the zooplancton of the investigated dead branches. Brachious species were the most frequent in all 5 dead reaches. The total individual number shows two annual maxima in May and September. During maxima the total individual number is as many as 80—85 000 ind./l, and during minima — especially in winter — it varyes between 6—8.000 ind./l.

Saphrobiological quality of the water of the investigated dead branches differs significantly also showing great changes all over the year. Dominating species of the winter months are oligo-, beta- and beta-mezosaprob species (o—b.: 38—45%, b.: 35—40%, b—a.: 13—18%). During summer months water-quality gradually decays and the number of beta-, alfa-mezosaprob organisms increases (o—b.: 22—24%, B.: 36—41%, b—a.: 39—45%).

Regarding pollution of the investigated dead reaches their order is: 1. Mártély-, (most polluted), 2. Tiszaug-, 3. Alpár-, 4. Körtvélyes-, 5. Atka dead reaches (less polluted).

MELANIJA, OBRADOVIĆ, BOŽA, P. and RUZENKA DURCJANSKI:

Data to the flora of the southern Tisza region

This paper includes the data on four plants having a significant role from the view-points of plant geography and floristics in the flora of the Southern Tisza region.

Alyssum linifolium is a boreal relic species found first on the post-glacial age along the Southern Tisza region. It seems to be a differentiating species on the Pannon Plain stretching to North as far as Titel plateau.

Vicia picta FISCH. et MEY. is a Pontian species. Its appearance was mentioned in the Southern Tisza region at Beodra by KOVÁCS referring to Thaissz. KOVÁCS himself found it at Óbecse in the inundation areas of Tisza in 1914. It is to be found in Hungary, Roumania, the Southern part of the USSR and Siberia. It is a rear plant *from floristic view-point,* though nowadays it is spreading. Its plant-geographical

importance is determined by the fact that its area's south-west border can be found along the Southern Tisza region.

Linaria Kociannovichii ASCHERS. This plant was described by Ascherson as the hybrid of *Linaria genistifolia* (L.) MILL and *Linaria vulgaris* MILL. Recent authors, like JÁVORKA included it into the subcategory of *Linaria angustissima* (LOIS.) BORB., or considered like SOÓ as a separate species. It is to be found in the European flora only in Hungary and Roumania. It is rare along the Southern Tisza region according to our investigations.

Ceratostigma plumbaginoides BUNGE is a bedding plant of Chinese origin that runs wild. It isn't mentioned either in the floae of Balkán paeninsula, Serbia or Croatia or in the weed flora of Yugoslavia.

All the four plants are important members of the flora of Souther Tisza region.

MÓCZÁR, L. and GYŐRFFY, GY.:

Quantitative and qualitative data on the flying insect communities on the "Körtvélyes" inundation area

On the moor-meadow of "Körtvélyes" island about 8200 insects were collected eith Malaise-trap in 7 periods (46 days) between 1972—1975. Hymenoptera, Lepidoptera, Coleoptera and Cicadinea groups were analysed from the stand-point of species diversity, species dominancy and species distribution, in summer, spring and autumn. We compared not only the data of seasons but those of the faunas of different living areas (saline area of Dorozsma, "Ásotthalom" forest). On the basis of these we established the following:

1. The ratio of Diptera order increased from spring to autumn from 53% to 86%. Subdominant Hymenoptera (11%) was followed by Cicadinea (6%) and Lepidoptera (6%).

2. Living-area specificity of the Hymenoptera was the greatest, that of Cicadinea was medium and Lepidoptera and Coleoptera were much less specific.

3. According to the Hymenoptera, Coleoptera and Cicadinea faunas the moor-meadow differs most from saline, quality of Lepidoptera fauna of these shows the gratest similarity.

4. Considering aspects the greatest similarity can be observed between the spring and summer Hymenoptera and Lepidoptera faunas (17 resp. 24%) while the autumn fauna differs most of all. Majority of Cicadinea spring and summer populations is represented by the species diversing in time. The greatest part of autumn fauna is to be found in summer too.

5. Hymenoptera diversity is the highest caused by the great species number. Diversity of Lepidoptera increases paralell with the biotop's diversity, while that of Cicadinea the greatest is on the lawns because of the greater evenness. Evenness of Coleoptera populations of different areas is nearly the same.

GALLÉ, L., GYŐRFFY, GY. and H. HORNUNG, ERZSÉBET:

The flood-wawe as oecological perturbation

There are few quantitative data in the literature of the Tisza investigation dealing with the effects of floods on the structure of epigenic animal populations. That's why the authors' assumptions based on these data have the character of working hypothesis:

1. Disaster theory is the suitable model for studying the floods' oecological consequences. The speed of inundation, its height and length have important effect in the forming of jumpings type "fold" disaster and in the measure of hysteresis and in the time of jumpings. Possibilities of appearance of the "cusp"-type disaster are decided by the number of refugees.

2. The recolonisation from other areas consists of two phases:

(a) in the immigration phase the number of initiation population is saturative and

(b) in the phase of multiplication it has logistic increase. Forming of these two phases and their ratio depend on the migrative inclination of the recolonizing populations and on the strategy of their multiplication.

FARKAS, Á.:

Effect of the Tisza floods in 1980 on the multiplication of some fish-species

Frequent and long floodsof 1980 year effected properly the spawning of the most fish-species.

Inundation area was covered with water almost constantly from February till the end of June. There were inundations of greater degree in the middle of February and March, at the end of April and at the beginning of June, August and December.

The warm water of the inundation area provided suitable possibilities for lyaing roes and food for young and their majority got back into the river with the reentry of the flood.

During the flood of February and March happened the spawning of pike and during the flood at the end of April that of pike-perch and that of the carp and the silure in June. The great quantity of young proves the successfull spawning.

BÁBA, K.:

Effect of the land areas of the Tisza plain on the forming of snail fauna

(Lecture will be published in the volume of Tiscia for 1983.)

LŐRINCZ, J.:

The winter-feeding of osperies in the reservation area of the middle-Tisza region

We began to feed osperies in "Pélyi" Bird reservation area in winter 1976—77. The first years provided only an indirect proof of success lacking proper experiences. In 1978 the coast of feeding was provided by the Direction of "Hortobágy" reservation area. In February of 1978 we could provide direct observations. At that time feeding place was frequented by 9 osperies and one young golden-eagle. Feeding has become regular since then and on the basis of present results and experiences a nation-wide movement is developing.

CZIZMAZIA, GY.:

Migratory dinamism of micromammals along the Tisza damn

(Lecture will be published in the volume of Tiscia for 1983.)

HALASY, KATALIN and CSOKNYA, MÁRIA:

Structure and functioning of the post-intestine of anisoptera larvae

In the case on Anisoptera larvae post-intestine modifies into intestine-branchia taking part in the breathing as well. Anatomically it can be divided into ileum and rectum of three-fold division (the proper rectum, breathing chamber and atrium).

Water necessary for respiration gets thourh the analis pyramid into the breathing chamber the inner part of which is covered with gill-laminae. This is the place of breathing. The epithel of the intestine forms the gill-laminae. Epithel-cells may be cylindric or cubic and finally flat. They are poor in organellum and their surface is covered with thin cuticula.

TÖLGYESI, GY. and KOZMA, A.:

Taxonomic and oecological data on the microelement concentration of the plants of Tisza, Kisköre and Abádszalók inundation areas

Significant phytocenological and oecological changes in the native vegetation of the inundation areas of the Middle-Tisza region and those of Kisköre—Abádszalók—Pusztataksony have frequently been stated since the completition of the barrage Tisza 11. caused by the Reservoir of 124 km^2 territory and by daming the water of the river up the direction of Tiszalök. Filling up the reservoir resulted in the destruction of soft-wood gallery-forest and their undergrowth over extended areas of the inundation plain on both sides of the river. Extended water cover results in new plant-associations. As a consequence of building of the reservoir and redamning the river significant changes occured both in vegetation and the soil from hydrological stand-points. This lecture points out some taxonomic and oecological changes of the area's vegetation on the basis of our examinations in 1980. Some of them are characterised briefly as follows:

1. Species of Graminae, Cyperaceae and Typhaceae families — investigated in the area — significantly differ chemotoxonomically from the dicotyledons with their small Ca, Mg, Cu and B content.

2. Na, as a macroelement and Mn as a microelement of the area's vegetation are especially suitable for the illustration of the differences between the monocotyledonous Graminae and Cyperaceae regarding these elements. According to our experiences plants with high mangan content have significant quantity of natrium as well. This can be explained by the reductive milieu of the firmly hydrofil soil of the inundation areas.

3. Investigated plants of the Tisza inundation areas on the whole and especially those of the area of Kisköre—Abádszalók show the significant ability of zinc-accumulation. At Abádszalók it is 77.8 ppm that is twice as much as the Hungarian

average (33.9 ppm). Because of its ideal mineral content and great quantity the vegetation of Kisköre—Abádszalók inundation area should be used for feeding more intensively.

BANCSI, I.:

Investigation of the small watershed area of the middle-Tisza region

The investigation of the small watershed areas provides the increasing number of information required by the problems of water management. These informations can be obtained by the periodical and detailed control of the quality change of water carried out with analytical methods during 5—6 years. Results of the above-mentioned examinations in the watershed area of Gerje—Perje in 1980 unanimously proved this idea to be correct.

The lecture includes the general references to the investigations of the small watershed areas and some characteristic details of our results.

The data of these investigations are going to be published in a paper.

STAMMER, ARANKA and MALIK, ERZSÉBET:

Change of the construction of blood cells in the fishes of Tisza

Eight types of blood cells described by SCÄPERKLAUS (1979), LEHMAN and STÜRENBURG (1975) were examined in ten fish species of Tisza with light-microscop using Giemza and Pappenheim dying and the cytoplasmic granulates were observed with electronmycroscope.

Blood cells of the fishes belonging to different orders and ages were totally the same but they greatly differed from the higher classes of vertebratae regarding their shape, size and plazma-organs. It is difficult to separate the thrombocytae, limphocytae and granulocytae. Classification of the blood cells developing in the different sections of the kidney — the main organ of haematogenesis — is difficult.

High salt and ammonia content, increase of temperature and pH, the lack of oxigen or vitamin and the effect of pesticides or antibiotics — all these factors result in the damage of cellular membranae, hypocromasia, amitosis, increase of the number of proeritrocytae, decomposition of the red blood cells, modification of the red blood cell — limphocyta ratio and forming vacoulum in the monocytae. Usually hamatogramm of the fish was changed only by a strong environmental effect, so it can be established that the blood analysis — although it is relatively easy to carry out — doesn't offer essential proof of diseases.

TÓTH, MÁRIA and ZSUGA, KATALIN:

Biological examination of the watershed area of Gerje and Perje

The plant and animal organisms of water have a significant effect on the water-quality by means of their metabolism. That's why their biological examination is important in studying the oecosystems.

Saprobiologic, bacteriologic, algalogic, chlorophyll content and zooplancton

analysis were carried out in the watershed area of Gerje and Perje between February and November of 1980. These data showed that the water-qualities of Gerje and Perje main channels significantly differ.

Bacterioplancton of the tributaries of Gerje main channel is rare, because of its poor nutrient content, the mass of photosyntetic pigments is small. Its alga flora is characteristic for clear waters, its special composition is various. Planctonic and bentic elements are mixed up in its zooplankton, it is populated with organisms characteristic for waters containing little organic material.

The water of Perje main channel is much more polluted, its bacterium content changes extremely seasonally depending on the sewage-inflow. Its chlorophyll content indicates eutroph-hypertroph relations ant high nutrient content. Seasonally occuring enormous mass of algae is represented by *Euglena* genus. Its zooplanctonic organisms are characteristic for polluted water, their quantity sporadically is enormous.

The data of biological experiences showed the Perje main channel to be also extremely polluted. Following the direction of current some natural clearing up can be detected but after flowin into the common Gerje—Perje main channel it causes still significant degradation of water-quality.

MOLNÁR, GY.:

Investigation into the nest colonies and nesting behaviour of the starling *(Sturnus vulgaris* L.) in the inundation area of the Tisza

The nesting colonies of starling play an important role in the biotops of birds nesting in the inundation area of the Tisza. The colonies develop in the hollows of willows of the inundation area after the starling's arrival at the end of March. Survey of the number of individuals and size of the nesting colonies was impossible because of the flood, so it required the application of a new method. Individuals flying out of the forest on the dam and in the adjecent agricultural areas in order to obtain food could be well followed and counted. In order to estimate the approximate number of pairs, number of starlins flying out or back to the forest in 10 minutes along the 300, 350 and 400 m long sections of dam was divided with the average time of feeding (3 minutes in the case of starlings).

If the number of flights is denoted by x, and the number of pairs by n, our estimation will be as follows:

$(x=3n)=9$ minutes, circ. 10 minutes

According to this in Tápé—Vesszős region of the Tisza inundation area 80 pairs of stralings were nestling in 4 populations. Because of the birds carry at one time some insects in their peckers to theit nestlings, and having a quick feedingrhytm the kill insects of considerable quantity. After the nestlings' maturita they are compelled with starving by their parents to leave the hollow. This procedure often goes on one day and a half. This problem is a true parent-descendant type conflict, which is hardly described.

MIKES, M., HABIJAN, V. and DIMITRIJEVIC, S.:

Oecological aspects of the wild cat's *(Felis Silvestris* SCHR., 1977*)* feeding behaviour

According to our investigations carried out along the Lower-Tisza region into the relative and frequency ratio of the wild cat's prey (HABIJAN—DIMITRIJEVIC 1979) and into the distribution of small mammals in certain biotypes and into the day-night rhytm of prey-predator can be drawn mutual and unambiguous connection. Rodents remnants found in their stomacs prove them being the main source fo the predator's food.

From faunistic stand point it is important to mention the first appearance of the forest-vole — *Cletrhrionomys glareolus* — at the Tisza, hintin at the primary forest stand of the Lower-Tisza regionon biocoenological level.

Analysing the question of "benefit" or "damage" wild cat by killing noxious rodents proved to be unanimously useful. It would be advisable to establish here a Protected area and provide the protection of the species in question.